

SCIENCE EDUCATION AND THE OHIO ACADEMY OF SCIENCE—AN HISTORICAL REVIEW¹

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At the meeting of the Ohio State University Biological Club on November 3, 1891, President William R. Lazenby suggested, at the conclusion of his presidential address, the formation of a State Academy of Science. He urged that "the initiatory steps toward the founding of such an academy should be taken by this group and tonight." A committee consisting of Prof. Lazenby, as chairman, and Profs. D. S. Kellicott and W. A. Kellerman was appointed immediately to plan an organizational meeting. This was called to order on December 31. Prof. A. M. Bleile was elected chairman and Prof. Lazenby was chosen secretary to serve for this meeting. A committee was selected to frame a constitution and the by-laws. The first set of officers was then elected.

Titles for 26 papers had been submitted for this organizational meeting. Ten were selected for reading while the committees were at work. The Ohio State Academy of Science was created, then, on the last day of 1891. Incorporation was attained on March 12, 1892, with 59 charter members. In 1914 the name was officially changed to The Ohio Academy of Science, a name which had been used for some ten years, unofficially, on most of the Academy publications.

For many years there was no sectional organization, and when sections were established, none was provided for the field of science education until as late as 1940. However, from the very beginning and throughout its long history, The Ohio Academy of Science has been active in promoting science education. In recent years this has become one of its major objectives. This paper will trace the highlights in fostering interest in science education in Ohio over a period of 70 years.

Article II of the original constitution, drawn up in 1891, stated specifically that one objective of the Academy is "to promote the diffusion of knowledge in the various departments of science." One of the papers submitted to be read at the organizational meeting was entitled "Biological Training as Preliminary to the Study of Medicine," written by H. E. Chapin. In the program of the first annual meeting, held in Columbus in 1892, there were three papers dealing with science education. The fourth annual summer field meeting held at Sandusky in 1895 met jointly with the Ohio Teachers Association. Prof. D. S. Kellicott of The Ohio State University informed teachers about the Academy of Science and urged their support in promoting the teaching of science in public schools. At the annual meeting held in Cincinnati that year, a report was given by Dr. E. W. Claypole on "A Mode of Preserving Specimens for Class Use."

At the winter meeting of 1897 held in Columbus, two reports were given on the teaching of science in public schools. In the discussion that followed it was suggested that the Academy publish a circular aimed at improving the teaching of science in the schools. A committee was appointed by President Kellerman (W. G. Tight, E. W. Claypole, and William Werthner), to consider the matter and to report back to the Academy membership. Also, Prof. John S. Royer spoke on the desirability of getting more school men into the Academy. A resolution submitted by J. F. Bliss was adopted which read as follows: "Whereas nature study is rapidly becoming an important feature of the public schools and

¹This paper was prepared by the Academy Historian for the Science Education Section of The Ohio Academy of Science, meeting at Cincinnati on April 21, 1961.

whereas the love of nature is the stimulus to all true scientific study, therefore, be it resolved that this Academy of Science requests that the State Agricultural Experiment Station continue to publish bulletins on scientific subjects in terms suited to the juvenile mind."

At the next annual meeting the committee on education reported but little progress. A new committee was then appointed, consisting of W. A. Kellerman, William Werthner, Mary E. Law, J. A. Bownocker, and C. J. Herrick. One of the new committee members, Miss Mary E. Law, had read a paper at this meeting on "A Plea for Science Teaching in the Public Schools." This report was printed in full in the 7th Annual Report of the Ohio State Academy of Science (1899). The following year the committee on science teaching presented a report at the annual meeting held in Cleveland. Much discussion centered around this report, but no record has been left of either the report itself, or any action resulting from it. The printed program listed the following items for discussion: (1) Proportion of time that should be given to science in the high school curriculum. (2) Branches of science to be included and their sequence. (3) Relative time devoted to laboratory and textbook work. (4) The extent that elementary science should be taught in the primary grades. (5) The preparation of teachers for this work.

The summer field meeting of 1900 was held at Put-in-Bay in the month of June. The Academy met with the Ohio State Teachers Association. At the next annual meeting, a member of the Committee on Science Education, William Werthner, read a report entitled, "Modern Language and Science in Ohio High School Courses." Three years later Dr. Edward L. Rice addressed the Academy on "A Statistical Plea for Nature Study."

At the annual meeting of 1904 F. L. Landacre, secretary of the Academy, reported on the work of the Allied Education Association of Ohio. He had been appointed as a member of the executive board of that society, which then extended an invitation to the Academy to participate in a joint meeting. As a result, a special meeting was held in Columbus on December 30 at which time J. C. Hambleton gave a report on "The Relative Value and Extent of Scientific and Literary Teaching in a High School Course," followed by a discussion among those present. The paper was published in the 13th Annual Report of the Academy.

In his presidential address at the annual meeting of 1905, Dr. Herbert Osborn stressed the need for further studies on the natural history of Ohio. He pointed out that such "would fill a sound foundation for the more exact teaching of science in our schools, a branch which is becoming more and more of fundamental importance in education." At this meeting two reports were read on the teaching of science in high schools.

Following a discussion on the value of field trips for students in secondary schools by Prof. George Hubbard at the meeting of 1908, it was voted that a committee be appointed by the president of the Academy to study the matter and report at the next annual meeting. At this same time a new constitution was prepared. Article VII provided for formal sections for the first time as follows: "Members not less than 15 in number may by special permission of the Academy unite to form a section for the investigation of any branch of science. Each section shall bear the name of the science which it represents." A section for science education was not established at that time, but papers and reports of an educational nature were given at frequent intervals at meetings of the established sections.

The presidential address for the meeting of 1912, given by Dr. Bruce Fink, was entitled "Botanical Instruction in Colleges." This was published in full in the *Proceedings of The Ohio Academy of Science* (6, Part 2: 72-87).

The 26th annual meeting of the Academy (1916) was held jointly with the Ohio College Association. The principal address was delivered by Prof. Charles H. Judd of the University of Chicago on "The More Complete Articulation of

Higher Instruction with High Schools." Four additional addresses were given on the general theme of college teaching of science and mathematics. The following year officers and members of the Academy were invited to take part in the Columbus meeting of the Central Association of Science and Mathematics Teachers.

The meeting of 1918 appropriately sponsored a symposium on science and the war. This included a report by E. H. Johnson on "The Newer Demands on Physics and Physics Teachers Due to the War." At the 36th annual meeting a symposium was held on biological training for medicine and dentistry.

An early attempt to stimulate working relations between the Academy and high school science teachers resulted in disappointment. Dr. C. G. Shatzer was appointed in 1929 to investigate ways to encourage interest in science among high school students. Dr. Shatzer wrote in the report that he, as a committee of one, "spent the weeks since its appointment in futile efforts to locate certain high school instructors, who had been reported as particularly interested in this program. These men were not found." He then made two suggestions: first, that a committee be appointed to contact other state academies and summarize their methods used to stimulate scientific endeavor among high school students; second, that the committee assist the membership committee in obtaining more members for the Academy among high school instructors. At this meeting President George W. Rightmire of The Ohio State University delivered an address on "Education in Ohio: The Academy's Part."

At the annual meeting for 1931, the Committee on Junior Scientific Effort reported that the Academies of Science in Iowa, Indiana, and Illinois are also engaged in a similar project. Results from a questionnaire sent to 37 Ohio high schools to get information on science clubs were summarized. Dr. Shatzer then outlined some recommendations for the Academy to follow, including the continuation of such a study by a committee consisting of college administrators and teachers, and high school administrators and teachers.

The following year, Dr. Shatzer reported on continued progress. The outstanding accomplishment was a District Scientific Conference of high school students, which was held in Springfield in 1932. A total of 94 student projects was placed on display, and the Conference was conducted largely under student leadership. This pilot conference was so successful that a recommendation was made to continue the program and to enlarge it wherever possible.

At the same meeting two symposia were held dealing with educational problems. One was entitled, "The Preparation of Students for Graduate Work in Physics," and the other was "An Experiment with the Symposium Method of Teaching."

At the annual meeting of 1933, the matter of a science program for secondary school students was discussed. Dr. Shatzer reported that following a conference held with the Director of the Ohio State Department of Education, he wished to propose that a central office be established through which the Academy could communicate to science students in the public schools, and that volunteer service be obtained from members of the Academy to carry out such duties. Also, that specialists among Academy members be asked to cooperate with such a central office in preparing suitable printed material for distribution and to aid students in the identification of specimens which they might collect. A budget of \$100 was asked to establish this program. After careful deliberation, the Executive Committee issued the following statement: "That notwithstanding the obvious merits in the Junior Scientific Endeavor Movement as revealed in the fine efforts and report of Dr. Shatzer, it was the unanimous opinion of the committee that due to a lack of funds, to meet and overcome the practical difficulties obviously inherent in the work, as pointed out by Dr. Shatzer, the only thing to do is to hold the matter in abeyance for the present at least." Even though the above proposal failed to materialize, some progress was made in public education by

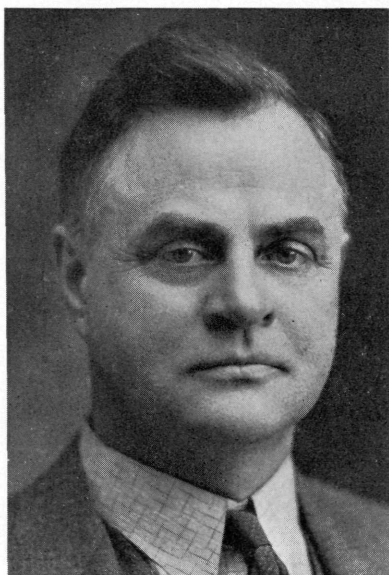
establishing a series of radio talks in the field of science. This was initiated on January 6, 1933, and Academy members volunteered to participate so that one program was offered each week over a period of time.

At that same meeting a special symposium was held on "Cultural Physics Courses." The following year the sections of physics and chemistry uniting with the Ohio Physics Club sponsored a joint education program. New methods and apparatus for teaching physical science were discussed.

At the annual meeting for 1937, an Invitational Address was given by Dr. Otis W. Caldwell, permanent secretary of the American Association for the Advancement of Science, on "Science and Higher Learning." At this meeting the Section of Chemistry sponsored another special program on educational matters. The following year an invitational address on "The Training of Science Teachers" was given by E. N. Dietrich, State Director of Education. Also at that meeting a special report was given by a committee which had been organized



DR. C. G. SHATZER
Organized the first District Scientific Conference for high school students.



DR. CHARLES W. JARVIS
Organized the first Junior Academy of Science.

the previous year "to cooperate with the Ohio Department of Education in outlining the public requirements in preparing teachers of science for the Ohio junior and senior high schools." The minimum preparation suggested, forty semester hours, was outlined in detail, and it was suggested that a Master's Degree might be completed in the general field of science, rather than in a special department, for secondary teaching.

At the Semicentennial Meeting of the Academy in 1940, a Junior Academy of Science was finally established after the abortive attempt of the previous several years. The Junior Academy was made a Section of the Senior Academy. Prof. Charles W. Jarvis of Ohio Wesleyan University was selected to head this project. A trial Junior Academy meeting was organized as a part of the Semicentennial Celebration, which took place on May 11, 1940. Sixty-five high school students from various parts of the state participated in presenting papers

in the fields of mathematics, physics, chemistry, and biology. A number of demonstrations and exhibitions were also placed on display. The success of this trial meeting assured the establishment of a Junior Academy.

Dr. Jarvis was in charge of the Junior Academy Program and Dr. Otis W. Caldwell spoke to this group on "The Essentials of a Successful Junior Academy." A proposed constitution was presented, officers were elected, and awards were given to those students who were judged best in reading papers and presenting demonstrations.

At the annual meeting for 1941, held in Cleveland, the Junior Academy continued along the lines established the previous year. The annual address for the Junior Academy Section was given by Dean William Westhoger of the College of Wooster. He spoke on "The Function of the Junior Academy in Relation to Science in the Secondary Schools." While the program for the Junior Academy, as well as the Senior Academy, suffered from wartime conditions, both nevertheless continued to operate as best as conditions would allow.

In 1943 Dr. Jarvis gave the principal address for the Junior Academy speaking on "Progress of Junior Academy of Science Work." The following year he spoke on, "The Future of the Junior Academy of Science." A second address was given at that time by Dr. H. H. Rosenberry of Ohio University, who discussed "The Effect of the War on the Future of Science Teaching."

The Academy did not meet in 1945 because of wartime restrictions. The Executive Committee did assemble and, among other things, discussed the possibility of providing a seal for use on certificates given to participants in the Junior Academy Program. Dr. Frederick H. Kreckler presented a motion that a committee of three be appointed "to handle the matter of Junior Academy sponsorship."

While the Academy resumed its annual meetings in 1946, the Junior Academy did not meet again until 1948. In the meantime, President Carmean appointed C. H. Bennett, Arthur Harper, and F. H. Kreckler, to serve as a committee on the Junior Academy program. Dr. Kreckler was named Chairman. At the 1947 meeting he presented a plan prepared by the committee to reorganize and reactivate the Junior Academy.

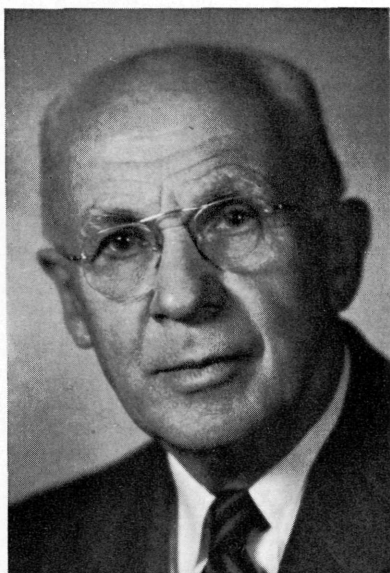
At the meeting of 1948 held at the University of Toledo a Section of Science Education was organized for science teachers, and the Junior Academy for high school students was reactivated under the sponsorship of the new section. Students taking part in the District and State Science Day exhibitions would become members of the Junior Academy for that year. Dr. Kreckler supervised these plans for reorganization. He presided at the meeting at which details for the program were discussed by those in attendance, and he instigated the publication of the *Ohio Academy of Science News*.

The first Annual State Science Day for the Junior Academy under the new plan of operation was held on April 22, 1949, at the meeting held on the campus of Denison University. Students receiving superior rating at the five District Science Day meetings held at the five state universities were invited to participate. Awards were given to students for their accomplishments. Outstanding teachers were honored at the Annual Business Meeting by Dr. Kreckler. He also prepared for publication in *The Ohio Journal of Science* (50: 301-304, 1950) an account of the present organization of the Junior Academy, the reason for its existence, and the details of its operation. The section of Science Education at this annual meeting held a panel discussion on "Project Work in the High School Science Groups."

At the annual meeting for 1951, the Conservation Committee recommended to the Academy the promotion of conservation education in the public schools. Also recommended was encouragement for a wider use of field study in the school program.

At the meeting of the Council in 1953, a recommendation from the Executive Committee was approved which provided that the district representatives of the Junior Academy Council and the Executive Secretary of the Junior Academy be appointed by the Executive Committee. Council members would serve for three year terms, and the secretary would serve a five year term. At the program for the Section of Science Education that year, a discussion was held on the "Proposed New Science Section of the Ohio Educational Association and How It May Serve Ohio Science Teachers," led by Dr. J. R. Richardson of The Ohio State University.

In 1954 Prof. R. E. McKay of Bowling Green State University was appointed Executive Secretary of the Junior Academy. Prof. McKay reported a total student participation of 2,268 from grades 7 through 12 for the district meetings and a total registration of 350 for the State Science Day Program. District meetings



DR. FREDERICK H. KRECKER
Reorganized the Junior Academy
of Science and founded the *Ohio
Academy of Science News*.

were held at seven centers throughout the state. At the meeting of the Executive Committee a lengthy discussion was held on the matter of teacher training and certification. This was stimulated by the publication of an article entitled "New Requirements for Provisional Teaching Certification in Science in Ohio" by Dr. C. E. Ronneberg in *The Science Teacher* for March, 1955.

At the meeting for 1956 the discussion on training and certification of science teachers was continued and President Paul Rothmund was authorized to appoint a temporary committee to study the matter. Dr. H. A. Cunningham of Kent State University was named chairman, and he selected a committee of twelve representatives from various disciplines of science and levels of education. That year the student participation in the Junior Academy program rose to 2,673 high school students in seven districts. Approximately 425 took part at the State Science Day Exhibition. The Section of Chemistry sponsored a report on science teacher certification given by Dr. Ronneberg. Also, a guest speaker, Dr. J. R.

Mayor, Director of the Science Teaching Improvement Program of the American Association for the Advancement of Science, spoke to Academy members on "Responsibility of Scientists and Science Departments for the Science Program of Secondary Schools."

The following year participation in the Junior Academy reached the level of 3,556 students in the seven District Science Day Meetings. Of these, 620 were invited to take part in the Ninth Annual State Science Day Program. Because of other pressing duties, Prof. McKay requested that he be replaced by Prof. G. G. Acker as Executive Secretary of the Junior Division, but Prof. McKay agreed to serve as Assistant Executive Secretary. At the meeting of the Section of Science Education, Dr. Cunningham reported on "Some Challenging Problems in the Training and Certification of Elementary and High School Teachers," and Dr. Ronneberg reported to the Section of Chemistry on "Needed Changes in Certification of Science Teachers."

The following year a special lecture, "Federal Program for Improving Science Education," was presented by Dr. Bowen C. Dees, Deputy Director of the National Science Foundation. This lecture was sponsored by the Section of Physics and Astronomy. A total of 877 high school students from 233 schools took part in the State Science Day Program. These students had been selected from 4,434 students taking part in the Tenth Annual District Science Day Meetings. A final report of the special committee on the training and certification of science teachers was given, and the Section of Chemistry sponsored that year a symposium on "Trends and Problems in the Teaching of General Chemistry."

In 1959 a new committee was established to continue the study of training and certification of science teachers with Dr. J. C. Gray of Western Reserve University as Chairman. That year, for the first time, the number of projects permitted entry at the State Science Day Exhibition was limited to 600 because of its rapid growth in recent years, and the limitation of available space. A Science Day Award was presented for the first time to those schools from which many students earned a superior rating.

The Section of Geography sponsored a panel discussion on "The Status of Geography in our Secondary Schools" at the Annual Meeting for 1960. A total of 600 projects in which nearly 700 students from 240 schools, representing nine Science Day Districts, were judged during the Junior Division Exposition. At the Annual Meeting, in addition to awards given to outstanding students, teachers, and schools, Prof. Acker presented a Distinguished Service Citation to Dr. Frederick H. Krecker for his eminent service in reviving and guiding the program of the Junior Division. Two of the outstanding Academy accomplishments for this year were the receipt of funds from the National Science Foundation to operate the Science Day Program in Ohio, and to establish a Visiting Scientist Program for Ohio schools. With substantial funds from this source, giving national recognition to the educational program of The Ohio Academy of Science, this organization has come of age as an effective body for the promotion of science education in the state of Ohio.

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